CLAIMS

What is claimed is:

1. A device to be disposed around a body portion of a person for treating pain in said body portion comprising

a wrap having an interior surface for contacting the body portion, and adapted to be disposed around the body portion,

said wrap being sufficiently elastic to enable the wrap to be stretched around the body portion to restrict the mobility of the body portion,

at least one pad section secured to an interior section of the wrap, each pad section adapted to be loaded with medicament,

at least one nodule extending inwardly from the interior surface of the wrap and adapted to contact and exert pressure at a desired specific location on the body portion, and

means for tightening and adjustably securing the wrap about the body portion, whereby tightening of the wrap causes medicament to exert pressure on and dispense medicament to the area of plain, and to cause the nodule to exert pressure upon the body portion.

2. The device of claim 1 having at least two substantially rigid nodules extending inwardly from the interior surface of the wrap.

3. The device of claim 1 having at least two substantially rigid nodules extending inwardly from the interior surface of the wrap, and located on the wrap such that when the wrap is in place around the body portion, the nodules contact predetermined known acupressure points.

4. The device of claim 1 wherein each nodule is a substantially rigid member having a curved contact surface of from approximately 1/4" to approximately 3/4" in diameter.

5. The device of claim 1wherein the medicament comprises an active ingredient selected from the group consisting of local anesthetics, non-steroidal antiinflammatory drugs, opioids, N-methyl-D-aspartate antagonists, steroids, corticosteroids, tricyclic antidepressants, and mixtures thereof.

6. The device of claim 5, wherein the active ingredient is a local anesthetic selected from the group consisting of ambucaine, amolanone, amylcaine, benoxinate, benzocaine, betoxycaine, biphenamine, bupivacaine, butacaine, butamben, butanilicaine, butethamine, butoxycaine, carticaine, chloroprocaine, cocaethylene, cocaine, cyclomethycaine, dibucaine, dimethisoquin, dimethocaine, diperodon, dyclonine, ecogonidine, ecogonine, euprocin, fenalcomine, formocaine, hexylcaine, hydroxyteteracaine, isobutyl *p*-aminobenzoate, leucinocaine, levoxadrol, lidocaine, mepivacaine, meprylcaine, metabutoxycaine, methyl chloride, myrtecaine, naepaine, octacaine, orthocaine, oxethazaine, parenthoxycaine, phenacaine, phenol, piperocaine, piridocaine, polidocanol, pramoxine, prilocaine, procaine, propanocaine, proparacaine, propipocaine, propoxycaine, pseudococaine, pyrrocaine, ropivacaine, salicyl alcohol, tetracaine, tolycaine, trimecaine, zolamine, lidocaine, bupivacaine, prilocaine, mepivacaine, etidocaine, ropivacaine, dibucaine, procaine, benzocaine, chloroprocaine, pharmaceutically acceptable salts thereof, and mixtures thereof.

7. The device of claim 5, wherein the active ingredient is a non-steroidal antiinflammatory drug selected from the group consisting of acetylsalicylicacid, sodium salicylate, choline magnesium trisalicylate, salsalate, diflunisal, salicylsalicylic acid, sulfasalazine, olsalazin, acetaminophen, indomethacin, sulindac, etodolac, tolmetin, diclofenac, ketorolac, ibuprofen, naproxen, flurbiprofen, ketoprofen, fenoprofen, oxaprozin, mefenamic, meclofenamic acid, piroxicam, tenoxicam, phenylbutazone, oxyphenthartazone, nabumetone, rofecoxib, celecoxib, and mixtures thereof.

8. The device of claim 5, wherein the active ingredient is an opioid selected from the group consisting of opioids for use with the invention as an active ingredient include, but are not limited to, alfentanil, allylprodine, alphaprodine, anileridine, benzylmorphine, benzitramide, nor-binaltorphimine, bremazocine, buprenorphine, butorphanol, clonitazene, codeine, CTOP, DAMGO, desomorphine, dextromoramide, dezocine, diampromide, dihydrocodeine, dihydrocodeine enol acetate, dihydromorphine, dimenoxadol, dimepheptanol, dimethylthiambutene, dioxaphetyl butyrate, dipipanone, diprenorphine, DPDPE, eptazocine, ethoheptazine, ethylketocyclazocine, ethylmethylthiambutene, etonitazene, etorphine, fentanyl, hydrocodone, hydromorphone, hydroxypethidine, isomethadone, ketobemidone, levorphanol, lofentanil, loperamide, meperidine, meptazinol, metazocaine, methadone, metopon, morphine, myrophine, nalbuphine, naltrindole, benzoylhydrazone, naltrexone, narceine, nicomorphine,

norlevorphanol, normethadone, normorphine, norpipanone, opium, oxycodone, oxymorphone, papaveretum, papaverine, pentazocine, phenadoxone, phenazocine, phenoperidine, piminodine, pirtramide, proheptazine, promedol, propiram, propoxyphene, remifentanil, spiradoline, sufentanil, tilidine, U50,488, and U69,593, amiphenazole, cyclazocine, levallorphan, nalmefene, nalorphine, naloxone, naltrexone, Tyr-Gly-Gly-Phe-Leu ([Leu^5]enkephalin), Tyr-Gly-Gly-Phe-Met ([Met^5]enkephalin), Tyr-Gly-Gly-Phe-Leu-Arg-Arg-Ile-Arg-Pro-Lys-Leu-Lys-Trp-Asp-Asn-Gln (DynorphinA), Tyr-Gly-Gly-Phe-Leu-Arg-Arg-Gln-Phe-Lys-Val-Val-Thr (Dynorphin B), Tyr-Gly-Gly-Phe-Leu-Arg-Lys-Tyr-Pro-Lys (α-Neoendorphin), Tyr-Gly-Gly-Phe-Leu-Arg-Lsy-Tyr-Pro (β-Neoendorphin), Tyr-Gly-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Lys-Asn-Ala-Tyr-Lys-Lys-Gly-Glu (β_h-Endorphin), [D-Ala^2,MePhe^{4}Gly(ol)^5]enkephalin (DAMGO), [D-Pen^2,D-Pen^5]enkephalin (DPDPE), [D-Ser^2,Leu^5]enkephalin-Thr^6 (DSLET), [D-Ala^2,D-Leu^5]enkephalin (DADL), D-Phe-Cys-Tyr-D-Trp-Orn-Thr-Pen-Thr-NH_2(CTOP), [D-Ala^2,N-MePhe^4,Met(O)^5-ol]enkephalin (FK-33824), Tyr-D-Ala-Phe-Asp-Val-Val-Gly-NH_2 ([D-Ala^2]Deltorphin 1), Tyr-D-Ala-Phe-Glu-Val-Val-Gly-NH_2 ([D-Ala^{2}Glu^4]Deltorphin (Deltorphin II)), Tyr-Pro-Phe-Pro-NH^2 (Morphiceptin), Tyr-Pro-MePhe-D-Pro-NH_2 (PL-017), [D-Ala^2,Leu^5,Cys^6]enkephalin (DALCE), pharmaceutically acceptable salts thereof, and mixtures thereof.

9. The device of claim 5, wherein the active ingredient is a N-methyl-D-aspartate antagonist selected from the group consisting of dextromethorphan, ketamine, dizolcipine (MK-801), remacemide hydrochloride, amantadine, budipine, memantine, and mixtures thereof.

10. The device of claim 5, wherein the active ingredient is a corticosteroid selected from the group consisting of betamethasone dipropionate, diflorasone diacetate, halobetasol propionate, amcinonide, desoximetasone, triamcinolone acetonide, flucinolone acetonide, diflorasone diacetate, halcinonide, flucinonide, and mixtures thereof.

11. The device of claim 5, wherein the active ingredient is a tricyclic antidepressant selected from the group consisting of imipramine hydrochloride, imipramine pamoate, amitriptyline hydrochloride, amoxapine, desipramine hydrochloride, doxepin, protriptyline hydrochloride, trimipramine, and mixtures thereof.

12. The device of claim 1, wherein the medicament comprises at least one excipient selected from the group consisting of preservatives, antioxidants, moisturizers, emollients, buffering agents, solubilizing agents, penetration enhancers, skin protectants, and mixtures thereof.

13. The device of claim 12, wherein the excipient is a preservative selected from the group consisting of ethanol, propylene glycol, benzyl alcohol, cholrobutanol, Quaternium 15, benzalkonium chloride, cetrimide, imidizolidinyl urea, sorbic acid, benzoic acid, methyl paraben, and mixtures thereof.

14. The device of claim 12, wherein the excipient is an antioxidant selected from the group consisting of ascorbic acid, sodium bisulfite, sodium metabisulfite, thiourea, ascorbic acid esters, butylated hydroxy anisole, butylated hydroxy tolune, tocopherol, EDTA, citric acid, and mixtures thereof.

15. The device of claim 12, wherein the excipient is a moisturizer selected from the group consisting of glycerin, sorbitol, polyethylene glycol, urea, lactic acid, propylene glycol and mixtures thereof.

16. The device of claim 12, wherein the excipient is an emollient selected from the group consisting of mineral oil, lanolin, isopropyl myristate, isopropyl palmitate, vegetable oil, cholesterol, stearic acid, stearyl alcohol, cetyl ester waxes, and mixtures thereof.

17. The device of claim 12, wherein the excipient is a buffering agent selected from the group consisting of anhydrous citric acid, lactic acid, and mixtures thereof.

18. The device of claim 12, wherein the excipient is a solubilizing agent selected from the group consisting of benzalkonium chloride, benzethonium chloride, benzyl benzoate, β-cyclodextrin, glycerol monstearate lecitihin, a poloxamer, propylene glycol, propylene carbonate, a polysorabate, sodium lauryl sulfate, sorbitan monolaurate, sorbitan monooleate, sorbitan monopalmitate, sorbitan monostearate, and mixtures thereof.

19. The device of claim 12, wherein the excipient is a penetration enhancer selected from the group consisting of propylene glycol, ethanol, lauryl alcohol, glycerol

monolaurate, salicylic acid, sodium dodecyl sulfate, cetyltrimethyl ammonium bromide, a polysorbates, a phospholipid, urea, and mixtures thereof.

20. The device of claim 12, wherein the excipient is a skin protectant selected from the group consisting of allantoin, dimethicone, glycerin, petrolatum, zinc oxide, and mixtures thereof.

21. The device of claim 1, wherein the medicament is formulated as a hydrogel.

22. A method of relieving pain in a body portion comprising extending a flexible wrap around the body portion, said wrap having a pad section loaded with medicament and at least one substantially rigid nodule extending inwardly and adapted to contract at least one pre-located acupressure point near the area of the pain,

locating the nodule above the acupressure point,

and tightening and adjustably securing the wrap such that mobility of the body portion is decreased, pressure is exerted by the nodule on the desired acupressure point, and medicament is dispensed to the are of pain.

23. The method of claim 22 wherein the device comprises at least two nodules, and all of the nodules are located above acupressure points.

24. The method of claim 22, wherein the device has a least two substantially rigid nodules, each of which has a curved contact surface of approximately 1/4" to approximately 3/4" in diameter.

25. The method of claim 22, wherein the medicament comprises an active ingredient selected from the group consisting of local anesthetics, non-steroidal antiinflammatory drugs, opioids, N-methyl-D-aspartate antagonists, steroids, corticosteroids, tricyclic antidepressants, and mixtures thereof.

26. The method of claim 25, wherein the active ingredient is a local anesthetic selected from the group consisting of ambucaine, amolanone, amylcaine, benoxinate, benzocaine, betoxycaine, biphenamine, bupivacaine, butacaine, butamben, butanilicaine, butethamine, butoxycaine, carticaine, chloroprocaine, cocaethylene, cocaine, cyclomethycaine, dibucaine, dimethisoquin, dimethocaine, diperodon, dyclonine,

ecogonidine, ecogonine, euprocin, fenalcomine, formocaine, hexylcaine, hydroxyteteracaine, isobutyl *p*-aminobenzoate, leucinocaine, levoxadrol, lidocaine, mepivacaine, meprylcaine, metabutoxycaine, methyl chloride, myrtecaine, naepaine, octacaine, orthocaine, oxethazaine, parenthoxycaine, phenacaine, phenol, piperocaine, piridocaine, polidocanol, pramoxine, prilocaine, procaine, propanocaine, proparacaine, propipocaine, propoxycaine, pseudococaine, pyrrocaine, ropivacaine, salicyl alcohol, tetracaine, tolycaine, trimecaine, zolamine, lidocaine, bupivacaine, prilocaine, mepivacaine, etidocaine, ropivacaine, dibucaine, procaine, benzocaine, chloroprocaine, pharmaceutically acceptable salts thereof, and mixtures thereof.

27. The method of claim 25, wherein the active ingredient is a non-steroidal antiinflammatory drug selected from the group consisting of acetylsalicylicacid, sodium salicylate, choline magnesium trisalicylate, salsalate, diflunisal, salicylsalicylic acid, sulfasalazine, olsalazin, acetaminophen, indomethacin, sulindac, etodolac, tolmetin, diclofenac, ketorolac, ibuprofen, naproxen, flurbiprofen, ketoprofen, fenoprofen, oxaprozin, mefenamic, meclofenamic acid, piroxicam, tenoxicam, phenylbutazone, oxyphenthartazone, nabumetone, rofecoxib, celecoxib, and mixtures thereof.

28. The method of claim 25, wherein the active ingredient is an opioid selected from the group consisting of alfentanil, allylprodine, alphaprodine, anileridine, benzylmorphine, benzitramide, nor-binaltorphimine, bremazocine, buprenorphine, butorphanol, clonitazene, codeine, CTOP, DAMGO, desomorphine, dextromoramide, dezocine, diampromide, dihydrocodeine, dihydrocodeine enol acetate, dihydromorphine, dimenoxadol, dimepheptanol, dimethylthiambutene, dioxaphetyl butyrate, dipipanone, diprenorphine, DPDPE, eptazocine, ethoheptazine, ethylketocyclazocine, ethylmethylthiambutene, etonitazene, etorphine, fentanyl, hydrocodone, hydromorphone, hydroxypethidine, isomethadone, ketobemidone, levorphanol, lofentanil, loperamide, meperidine, meptazinol, metazocaine, methadone, metopon, morphine, myrophine, nalbuphine, naltrindole, benzoylhydrazone, naltrexone, narceine, nicomorphine, norlevorphanol, normethadone, normorphine, norpipanone, opium, oxycodone, oxymorphone, papaveretum, papaverine, pentazocine, phenadoxone, phenazocine, phenoperidine, piminodine, pirtramide, proheptazine, promedol, propiram, propoxyphene, remifentanil, spiradoline, sufentanil, tilidine, U50,488, and U69,593, amiphenazole, cyclazocine, levallorphan, nalmefene, nalorphine, naloxone, naltrexone, Tyr-Gly-Gly-Phe-Leu ([Leu^5]enkephalin), Tyr-Gly-Gly-Phe-Met ([Met^5]enkephalin), Tyr-Gly-Gly-Phe-Leu-

Arg-Arg-Ile-Arg-Pro-Lys-Leu-Lys-Trp-Asp-Asn-Gln (DynorphinA), Tyr-Gly-Gly-Phe-Leu-Arg-Arg-Gln-Phe-Lys-Val-Val-Thr (Dynorphin B), Tyr-Gly-Gly-Phe-Leu-Arg-Lys-Tyr-Pro-Lys (α-Neoendorphin), Tyr-Gly-Gly-Phe-Leu-Arg-Lsy-Tyr-Pro (β-Neoendorphin), Tyr-Gly-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Lys-Asn-Ala-Tyr-Lys-Lys-Gly-Glu (β_h-Endorphin), [D-Ala^2,MePhe^{4}Gly(ol)^5]enkephalin (DAMGO), [D-Pen^2,D-Pen^5]enkephalin (DPDPE), [D-Ser^2,Leu^5]enkephalin-Thr^6 (DSLET), [D-Ala^2,D-Leu^5]enkephalin (DADL), D-Phe-Cys-Tyr-D-Trp-Orn-Thr-Pen-Thr-NH_2(CTOP), [D-Ala^2,N-MePhe^4,Met(O)^5-ol]enkephalin (FK-33824), Tyr-D-Ala-Phe-Asp-Val-Val-Gly-NH_2 ([D-Ala^2]Deltorphin 1), Tyr-D-Ala-Phe-Glu-Val-Val-Gly-NH_2 ([D-Ala^{2}Glu^4]Deltorphin (Deltorphin II)), Tyr-Pro-Phe-Pro-NH^2 (Morphiceptin), Tyr-Pro-MePhe-D-Pro-NH_2 (PL-017), [D-Ala^2,Leu^5,Cys^6]enkephalin (DALCE), pharmaceutically acceptable salts thereof, and mixtures thereof.

29. The method of claim 25, wherein the active ingredient is a N-methyl-D-aspartate antagonist selected from the group consisting of dextromethorphan, ketamine, dizolcipine (MK-801), remacemide hydrochloride, amantadine, budipine, memantine, and mixtures thereof.

30. The method of claim 25, wherein the active ingredient is a corticosteroid selected from the group consisting of betamethasone dipropionate, diflorasone diacetate, halobetasol propionate, amcinonide, desoximetasone, triamcinolone acetonide, flucinolone acetonide, diflorasone diacetate, halcinonide, flucinonide, and mixtures thereof.

31. The method of claim 25, wherein the active ingredient is a tricyclic antidepressant selected from the group consisting of imipramine hydrochloride, imipramine pamoate, amitriptyline hydrochloride, amoxapine, desipramine hydrochloride, doxepin, protriptyline hydrochloride, trimipramine, and mixtures thereof.

32. The method of claim 22, wherein the medicament comprises at least one excipient selected from the group consisting of preservatives, antioxidants, moisturizers, emollients, buffering agents, solubilizing agents, penetration enhancers, skin protectants, and mixtures thereof.

33. The method of claim 22, wherein the excipient is a preservative selected from the group consisting of ethanol, propylene glycol, benzyl alcohol, cholrobutanol,

Quaternium 15, benzalkonium chloride, cetrimide, imidizolidinyl urea, sorbic acid, benzoic acid, methyl paraben, and mixtures thereof.

34. The method of claim 22, wherein the excipient is an antioxidant selected from the group consisting of ascorbic acid, sodium bisulfite, sodium metabisulfite, thiourea, ascorbic acid esters, butylated hydroxy anisole, butylated hydroxy tolune, tocopherol, EDTA, citric acid and mixtures thereof.

35. The method of claim 22, wherein the excipient is a moisturizer selected from the group consisting of glycerin, sorbitol, polyethylene glycol, urea, lactic acid, propylene glycol and mixtures thereof.

36. The method of claim 22, wherein the excipient is an emollient selected from the group consisting of mineral oil, lanolin, isopropyl myristate, isopropyl palmitate , vegetable oil, cholesterol, stearic acid, stearyl alcohol, cetyl ester waxes, and mixtures thereof.

37. The method of claim 22, wherein the excipient is a buffering agent selected from the group consisting of anhydrous citric acid, lactic acid, and mixtures thereof.

38. The method of claim 22, wherein the excipient is a solubilizing agent selected from the group consisting of benzalkonium chloride, benzethonium chloride, benzyl benzoate, β-cyclodextrin, glycerol monstearate lecitihin, a poloxamer, propylene glycol, propylene carbonate, a polysorabate, sodium lauryl sulfate, sorbitan monolaurate, sorbitan monooleate, sorbitan monopalmitate, sorbitan monostearate, and mixtures thereof.

39. The method of claim 22, wherein the excipient is a penetration enhancer selected from the group consisting of propylene glycol, ethanol, lauryl alcohol, glycerol monolaurate, salicylic acid, sodium dodecyl sulfate, cetyltrimethyl ammonium bromide, a polysorbate, a phospholipid, urea, and mixtures thereof.

40. The method of claim 22, wherein the excipient is a skin protectant selected from the group consisting of allantoin, dimethicone, glycerin, petrolatum, zinc oxide, and mixtures thereof.

41. The method of claim 22, wherein the medicament is formulated as a hydrogel.

42. The method of claim 22, wherein the body portion is injured.